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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/994,443	11/27/2001	Brian D. Herr	POU920010125US1	9512

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EXAMINER

PEUGH, BRIAN R

ART UNIT	PAPER NUMBER
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2187

DATE MAILED: 04/08/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/994,443

Applicant(s)

HERR ET AL.

Examiner

Brian R. Peugh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 January 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8-21 is/are rejected.
- 7) ☒ Claim(s) 7 and 22 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## **DETAILED ACTION**

### ***Claim Objections***

Claims 7, 14, and 22 are objected to because of the following informalities:

Replace "block" with --blocks-- in line 3 of claims 7 and 14, and in line 4 of claim

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Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 14 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 14 recites the limitations "the pinned memory buffers" in line 1 and "the memory pool" in lines 2 and 3. There is insufficient antecedent basis for this limitation in the claim. Claim limitations related to "pinned memory buffers" and a "memory pool" had not been previously recited.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-6, 8-13, and 15-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Goldstein et al. (US# 6,247,105).

Regarding claim 1, Goldstein et al. teaches implementing memory allocation in a **time sensitive data communications** system according to the computer system in which the invention is implemented, where the computer system includes I/O devices such as serial and parallel communication ports, network interfaces, etc. (Fig. 3; col. 9, lines 48-59). Allocatable memory space is divided into multiple **base memory blocks**, where each of these memory blocks comprises a number of pages, and each page comprises a number of buckets. A bucket comprises a unit of memory space that may be allocated (col. 4, lines 46-51; col. 5, lines 12-17). Figures 2 and 4 illustrate the memory allocation system of Goldstein et al. The **base memory block** refers to a memory page that is selected, which contains the optimum number of free buckets according to a memory request. This means that a request for a section of memory is made according to the desired bucket size (**specification of buffer size**) (col. 10, lines 40-45). The **memory buffer** as claimed refers to a size of memory space to be used for

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a process, which may or may not be greater than the size of a single bucket allocated from memory. At step 404, the system of Goldstein et al. **determines whether a sufficient amount of memory** has been allocated for the request (col. 10, lines 46-54), in that it is determined whether the allocated bucket is large enough to satisfy the memory request according to the request's size. If additional memory space is required, another bucket of the **same size** as the bucket already allocated is **additionally allocated** from the same memory page (col. 10, lines 53-65), or from an additional memory page (col. 10, line 66 – col. 11, line 3). Goldstein et al. **does not teach that the additionally allocated memory must be contiguous** with the previously allocated memory.

Regarding claims 2, 9, and 17, Goldstein et al. teaches that all memory blocks, and thus pages and buckets (**buffers**), are stored in the memory space. The memory space is run by the kernel and prevents other processes from using or modifying the memory space (**pinning**) (col. 4, lines 38-42).

Regarding claims 3, 11, and 18, free (**additional**) buckets for allocation are linked according to a **linked list** found in the descriptor block of the memory page (col. 7, lines 52-60).

Regarding claims 4, 12, and 19, each memory page contains buckets of a certain size according to the memory block to which the page is allocated. Each bucket within that block are of the **same predetermined size** (Figure 1; col. 5, lines 12-18).

Regarding claims 5, 13, and 20, Goldstein et al. teaches that the invention may be implemented for use in the general purpose computer system of Figure 3, or that the invention may be implemented to function in any type of computer system or programming or processing environment (col. 9, lines 29-30; col. 10, lines 10-12), which read upon the **mass storage data server application processing module** as claimed.

Regarding claims 6, 15, and 21, the claim limitations do not state or require that the first memory buffer is still allocated to the base memory block and additional memory block, in that the subsequent *request* immediately follows the original *request*. Thus, these two blocks may have been released for future memory allocation after their original purpose had been satisfied and are currently empty and free for allocation. Also, the allocation of a second additional memory block (bucket) as recited in claim 6 is merely an extension of the original allocation of a first additional memory block as outlined above in regards to claim 1. The invention of Goldstein et al. teaches that if an additional bucket is not enough to satisfy the memory request, additional buckets may be allocated for the memory request according to the loop description of Figure 4 (steps 403-405). Therefore, Goldstein et al. teaches that additional buckets may be allocated in accordance to the size of the requested buffer, or memory request.

Regarding claim 8, Goldstein et al. teaches implementing memory allocation in a **time sensitive data communications** system according to the computer system in which the invention is implemented, where the computer system includes I/O devices such as serial and parallel communication ports, network interfaces, etc. (Fig. 3; col. 9, lines 48-59). The operating system **kernel (memory allocation module)** reserves the **kernel memory** area for exclusive use by the kernel (col. 4, lines 38-42). Allocatable memory space is divided into multiple **base memory blocks**, where each of these memory blocks comprises a number of pages, and each page comprises a number of buckets. A bucket comprises a unit of memory space that may be allocated (col. 4, lines 46-51; col. 5, lines 12-17). Figures 2 and 4 illustrate the memory allocation system of Goldstein et al. The **base memory block** refers to a memory page that is selected, which contains the optimum number of free buckets according to a memory request. This means that a request for a section of memory is made according to the desired bucket size (**specification of buffer size**) (col. 10, lines 40-45). The **memory buffer** as claimed refers to a size of memory space to be used for a process, which may or may not be greater than the size of a single bucket allocated from memory. At step 404, the system of Goldstein et al. **determines whether a sufficient amount of memory** has been allocated for the request (col. 10, lines 46-54), in that it is determined whether the allocated bucket is large enough to satisfy the memory request according to the request's size. If additional memory space is required, another bucket of the **same size** as the bucket already allocated is **additionally allocated** from the same memory page (col. 10, lines 53-65), or from an additional memory page (col. 10, line 66 – col.

11, line 3). Goldstein et al. **does not teach that the additionally allocated memory must be contiguous** with the previously allocated memory.

Regarding claim 10, and as seen in Figure 2, the allocatable free buckets are **not found contiguously** (col. 7, lines 60-67).

Regarding claim 16, Goldstein et al. teaches implementing memory allocation in a **time sensitive data communications** system according to the computer system in which the invention is implemented, where the computer system includes I/O devices such as serial and parallel communication ports, network interfaces, etc. (Fig. 3; col. 9, lines 48-59). The operating system kernel reserves the **kernel memory** area for exclusive use by the kernel (col. 4, lines 38-42). As is notoriously well known in the art, the kernel is comprised of **computer instructions** that provide the backbone of an operating system, all of which are inherently **stored on a storage medium**, such as a hard disk drive. Allocatable memory space is divided into multiple **base memory blocks**, where each of these memory blocks comprises a number of pages, and each page comprises a number of buckets. A bucket comprises a unit of memory space that may be allocated (col. 4, lines 46-51; col. 5, lines 12-17). Figures 2 and 4 illustrate the memory allocation system of Goldstein et al. The **base memory block** refers to a memory page that is selected, which contains the optimum number of free buckets according to a memory request. This means that a request for a section of memory is made according to the desired bucket size (**specification of buffer size**) (col. 10, lines



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40-45). The **memory buffer** as claimed refers to a size of memory space to be used for a process, which may or may not be greater than the size of a single bucket allocated from memory. At step 404, the system of Goldstein et al. **determines whether a sufficient amount of memory** has been allocated for the request (col. 10, lines 46-54), in that it is determined whether the allocated bucket is large enough to satisfy the memory request according to the request's size. If additional memory space is required, another bucket of the **same size** as the bucket already allocated is **additionally allocated** from the same memory page (col. 10, lines 53-65), or from an additional memory page (col. 10, line 66 – col. 11, line 3). Goldstein et al. **does not teach that the additionally allocated memory must be contiguous** with the previously allocated memory.

### ***Allowable Subject Matter***

Claims 7 and 22 would be allowable over the prior if rewritten or amended to overcome the objection(s) set forth above.

Claim 14 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

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***Conclusion***

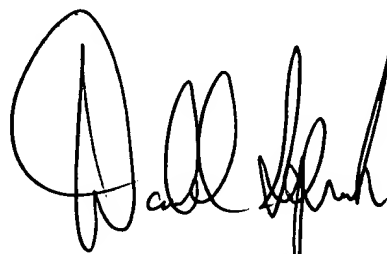
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art corresponds to related kernel memory allocation systems.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian R. Peugh whose telephone number is 703-306-5843. The examiner can normally be reached on Monday-Thursday from 7:00am to 4:30pm. The examiner can also be reached on alternate Friday's from 7:00am to 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald Sparks, can be reached on (703) 308-1756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-9600.

DS/BRP



Donald Sparks  
Supervisory Patent Examiner  
Art Unit 2187

April 2, 2004